Title 117 - NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

Chapter 7 - WATER QUALITY STANDARDS FOR WETLANDS

001 Wetlands serve a multitude of important functions which include, but are not limited to, providing habitat for aquatic life and other wildlife, food production, stormwater control and flood attenuation, erosion control, shoreline stabilization, nonpoint source runoff filtration, groundwater recharge, and aesthetics. Wetlands are characterized by extreme variations in hydrology, soils, vegetation, water quality, and biotic assemblages. The dynamic nature of wetlands requires standards which recognize their variability of natural water quality both through time at individual sites and between sites across the State. Wetland classifications, beneficial uses, and water quality criteria contained in this chapter reflect the unique characteristics of wetlands in Nebraska.

002 Application of Standards to Wetlands.

002.01 These standards shall apply to all natural wetlands and all artificial wetlands except as provided in paragraph 002.02. Numerical criteria which rely on water in order to be measured, shall not be deemed applicable during periods when water is not present.

002.02 These standards shall not apply to artificial wetlands constructed for the purpose of wastewater treatment, wastewater retention, or irrigation reuse. However, any discharge to surface waters from artificial wetlands constructed for these purposes shall meet the applicable standards for the receiving water.

002.03 Wastewater from domestic, municipal, or industrial sources authorized by NPDES permits to discharge to wetlands shall meet all applicable standards for the wetland. No mixing zones shall be allowed within wetlands.

003 Wetland Classifications

Wetlands are classified into two categories based on hydrological characteristics which affect the attainable beneficial uses. For purposes of these standards, the two general classifications are surface-water overflow wetlands and isolated wetlands. Within each classification, specific wetland complexes and individual wetlands may be identified by their physical, chemical, and biological characteristics and functional values. Wetlands are defined in Chapter 1. Wetlands are identified and delineated using methods contained in the "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterway Experiment Station, Vicksburg, MS.

003.01 Surface-Water Overflow Wetlands.

These are wetlands which exhibit a surface water connection to an adjacent stream or lake on a regular or periodic basis. These wetlands have the potential to provide beneficial uses identical to those of the adjacent stream or lake in addition to the beneficial uses recognized for wetlands (paragraph 004). These wetlands shall be protected for the beneficial uses of the adjacent stream or lake as assigned in Chapters 5 or 6 in addition to those identified for wetlands. Water quality criteria associated with assigned beneficial uses of adjacent waterbodies (Chapter 4) shall apply to surface-water overflow wetlands in addition to criteria associated with wetland beneficial uses. When numerical criteria associated with wetland aquatic life beneficial uses differ with aquatic life criteria associated with the adjacent stream or lake, the more stringent criteria shall apply.

003.02 Isolated Wetlands.

These are wetlands which have no regular or periodic surface water connection to an adjacent stream or lake. The source of water for these wetlands may be either ground water or surface runoff. These wetlands shall be protected for the beneficial uses recognized for wetlands (paragraph 004). Water quality criteria associated with wetland beneficial uses shall apply to isolated wetlands.

004 Beneficial Uses

Beneficial uses are assigned to wetlands within or bordering upon the State of Nebraska. Assigned beneficial uses are protected by the narrative and numerical water quality criteria listed or referenced in this chapter. Additionally, assigned and existing beneficial uses are protected

by the Antidegradation Clause in Chapter 3. Some uses require higher quality water than others. When multiple uses are assigned to the same wetland, all assigned uses will be protected.

Beneficial uses assigned to all wetlands are:

Aquatic Life

Wildlife

Agricultural Water Supply

Aesthetics

These uses are not intended in any way to conflict with the quantitative beneficial uses provided for in Neb. Rev. Stat., Ch 46, regulating irrigation or the authority of the Nebraska Department of Water Resources.

004.01 Aquatic Life

Wetlands assigned this beneficial use provide, or could provide, habitat capable of supporting aquatic biota on a regular or periodic basis. Aquatic biota are life forms which require water to fulfill basic life functions such as reproduction, growth, and development. Examples of aquatic biota include, but are not limited to, fish, macroinvertebrates, amphibians, and hydrophytic vegetation.

004.01A General Criteria

Water quality criteria are established to protect assigned beneficial uses. However, traditional water quality parameters in wetlands such as pH, temperature, dissolved oxygen, ammonia, chloride, and conductivity may naturally vary outside accepted ranges for other surface waters. Water quality criteria for specific wetlands or wetland complexes, except numerical criteria for toxic substances (paragraph 004.01C1), petroleum oil (paragraph 004.01D), and residual chlorine (paragraph 004.01E), shall be based on natural background values for traditional water quality parameters. However, these criteria shall be no more stringent than those associated with the Class B Warmwater Aquatic Life classification or the General Criteria for Aquatic Life of Chapter 4, Paragraphs 003.01A, 003.01B, 003.01G, and 003.04B.

004.01B Biological Criteria

The biological integrity of wetlands shall be maintained and protected. Any human activity causing water pollution which would significantly degrade the biological integrity of wetlands is a violation of these Standards. Upland soil and water conservation practices or normal farming, silviculture, and ranching activities involving tilling, seeding, cultivating, harvesting, and grazing for the production of food, fiber, and forest products, shall not be considered to cause significant degradation of biological integrity in wetlands. However, the criteria in section 004.01C for toxic substances are applicable to wetlands where such toxic substances are the result of activities listed within this subsection.

004.01B1 Any human activity causing water pollution which would cause a significant adverse impact to an identified "key species" is a violation of these Standards.

004.01B1a Key Species

Key aquatic species are identified endangered or threatened species. The following list defines the aquatic species considered by the Department to be key species. In addition to this list, any key species listed in Chapter 5 for a waterbody adjacent to a surface-water overflow wetland will be considered a key species for the wetland.

COMMON NAME	SCIENTIFIC NAME
Endangered Species	
Saltwort	*Salicornia rubra*
Threatened Species:	
Western Prairie Fringed Orchid	*Platanthera praeclara*
Ute Lady Tresses	*Spiranthes diluvialis*
Small White Lady's Slipper	*Cypripedium candidum*

004.01C Toxic Substances

Wetlands shall be free from toxic substances, alone or in combination with other substances, in concentrations that result in acute or chronic toxicity to aquatic life, except as specified in Chapter 2. Toxic substances shall not be present in concentrations that result in bioaccumulation or biomagnification in aquatic organisms which renders them unsuitable or unsafe for consumption.

004.01C1 The following numerical criteria for the protection of aquatic life and their uses shall not be exceeded. Unless otherwise noted, criteria are based on total concentrations.

	CRITERIA (ug/l)		CAS
POLLUTANT	Acute	Chronic	No.*
Pesticides:			
Acrolein	68[a]	21[b]	107028
Alachlor	760[c]	76[d]	15972608
Aldrin	3.0[a]	0.00136[b,e]	309002
Atrazine	330[cc]	12[d]	1912249
BHC[1]	100[a]	0.414[b,e]	319868
Alpha-BHC	(Reserved)	0.131[b,e]	319846
Beta-BHC	(Reserved)	0.46[b,e]	319857
Chlordane	2.4[a]	0.0043[b]	57749
Chlorpyrifos	0.083[c]	0.041[d]	2921882
DCPA[3]	(Reserved)	14,300[d]	1861321
DDT[4]	1.1[a]	0.001[b]	50293
DDT metabolite (DDE)	1050[a]	0.0059[b,e]	72559
DDT metabolite (TDE, DDD)	0.6[a]	0.0084[b,e]	72548
Demeton	(Reserved)	0.1[b]	8065483
Dieldrin	0.24[a]	0.00144[b,e]	60571
Dioxin[5]	< 0.01[a]	< 0.00000014[b,e]	1746016
Alpha-Endosulfan	0.22[a]	0.056[b]	959988
Beta-Endosulfan	0.22[a]	0.056[b]	33213659
Endosulfan sulfate	(Reserved)	240[b,f]	1031078
Endrin	0.086[a]	0.036[b]	72208
Endrin aldehyde	(Reserved)	0.81[b,f]	7421934

POLLUTANT	CRITERIA (ug/l) Acute	CRITERIA (ug/l) Chronic	CAS No.*
Guthion	(Reserved)	0.01[b]	86500
Heptachlor	0.52[a]	0.00214[b,e]	76448
Heptachlor epoxide	0.52[a]	0.0011[b,e]	1024573
Isophorone	117,000[a]	26,000[b,e]	78591
Lindane[2]	0.95[a]	0.16[b]	58899
Malathion	(Reserved)	0.1[b]	121755
Methoxychlor	(Reserved)	0.03[b]	72435
Metolachlor	390[c]	100[d]	51218452
Metribuzin	(Reserved)	100[d]	21087649
Mirex	(Reserved)	0.001[d]	2385855
Parathion	0.065[c]	0.013[d]	56382
Pentachlorophenol	$e^{(1.005(pH)-4.869)}$ c	$e^{(1.005(pH)-5.134)}$ d	87865
Propachlor	(Reserved)	8.0[d]	1918167
Toxaphene	0.73[c]	0.0002[d]	8001352
Metals and Inorganics[6] :			
Aluminum	750[c]	87[d]	7429905
Antimony	88[c]	30[d]	7440360
Arsenic	340[c]	16.7[b,e]	7440382
Beryllium	130[a]	5.3[d]	7440417
Cadmium[7]	$(ACF)e^{(1.0166[\ln hardness]-2.849)}$ c	$(CCF)e^{(0.7409[\ln hardness]-4.719)}$ d	7440439
Chromium (III)	$(0.316)e^{(0.819[\ln hardness]+3.764)}$ c	$(0.860)e^{(0.819[\ln hardness]+0.724)}$ d	16065831
Chromium (VI)	16[c]	11[d]	18540299
Copper	$(0.960)e^{(0.9422[\ln hardness]-1.700)}$ c	$(0.960)e^{(.08545[\ln hardness]-1.702)}$ d	7440508
Cyanide	41.3[c]	9.8[d]	57125
Iron	(Reserved)	1,000[b]	7439896
Lead[8]	$(CF)e^{(1.273[\ln hardness]-1.460)}$ c	$(CF)e^{(1.273[\ln hardness]-4.705)}$ d	7439921
Manganese	(Reserved)	1,000[b,e]	7439965
Mercury[9]	1.4[c]	0.051[b,f]	7439976
Nickel	$(0.998)e^{(0.846[\ln hardness]+2.255)}$ c	$(0.997)e^{(0.846[\ln hardness]+0.0584)}$ d	7440020
Selenium[10]	20[c]	5.0[d]	7782492

POLLUTANT	CRITERIA (ug/l) Acute	CRITERIA (ug/l) Chronic	CAS No.*
Silver	$(0.85)e^{(1.72[\ln hardness]-6.52)}$ c	(Reserved)	7440224
Thallium	1,400[a]	6.3[b,f]	7440280
Zinc	$(0.978)e^{(0.8473[\ln hardness]+0.884)}$ c	$(0.986)e^{(0.8473[\ln hardness]+0.884)}$ d	7440666
PCBs and Related Compounds:			
PCBs	2.0[a]	0.0017[b,e]	1336363
Chlorinated Naphthalenes	1,600[a]	43,000[b,e]	.....
Halogenated Aliphatics:			
Halomethanes	11,000[a]	157[b,e]	.....
Bromoform	(Reserved)	3,600[b,e]	75252
Methyl bromide	(Reserved)	4,000[b,f]	74839
Chloroform	28,900[a]	1,240[b]	67663
Carbon tetrachloride	35,200[a]	44.2[b,e]	56235
Methylene chloride	(Reserved)	16,000[b,e]	75092
1,2-dichloroethane	118,000[a]	986[b,e]	107062
Hexachloroethane	980[a]	89.5[b,e]	67721
Pentachloroethane	7,240[a]	1,100[b]	76017
Trichlorinated ethanes	18,000[a]	(Reserved)	25323891
1,1,2-trichloroethane	(Reserved)	419.9[b,e]	79005
Tetrachloroethanes	9,320[a]	(Reserved)	25322207
1,1,2,2-tetrachloroethane	(Reserved)	110[b,e]	79345
Dichloroethylenes	11,600[a]	(Reserved)	25323303
1,1-dichloroethylene	(Reserved)	32[b,e]	75354
1,2-trans-dichloroethylene	(Reserved)	140,000[b,f]	156605
Tetrachloroethylene	5,280[a]	88.5[b,e]	127184
Trichloroethylene	45,000[a]	810[b,e]	79016
Chlorodibromomethane	(Reserved)	340[b,e]	124481
Dichlorobromomethane	(Reserved)	460[b,e]	75274
Dichloropropane	23,000[a]	5,700[b]	26638197
1,2-dichloropropane	(Reserved)	390[b,e]	78875
Dichloropropene	6,060[a]	244[b]	26952238

POLLUTANT	CRITERIA (ug/l) Acute	Chronic	CAS No.*
1,3-dichloropropylene	(Reserved)	1,700[b,f]	542756
Hexachlorobutadiene	90[a]	9.3[b]	87683
Hexachlorocyclopentadiene	7.0[a]	5.2[b]	77474
Vinyl Chloride	(Reserved)	5,250[b,e]	75014
Ethers:			
Bis(2-chloroethyl)ether	(Reserved)	14[b,e]	111444
Bis(2-chloroisopropyl)ether	(Reserved)	170,000[b,f]	39638329
Bis chloromethyl ether	(Reserved)	0.0078[b,e]	542881
Chloroalkyl ethers	238,000[a]	(Reserved)	.....
Haloethers	360[a]	122[b]	.....
Monocyclic Aromatics except Phenols, Cresols, and Phthalates:			
Benzene	5,300[a]	712.8[b,e]	71432
Chlorinated benzenes	250[a]	50[b]	.....
Dichlorobenzenes	1,120[a]	763[b]	25321226
Ethylbenzene	32,000[a]	29,000[b,f]	100414
Hexachlorobenzene	6.0[a]	0.0077[b,e]	118741
Nitrobenzene	27,000[a]	1,900[b,f]	98953
Pentachlorobenzene	(Reserved)	41[b,e]	608935
1,2,4,5-tetrachlorobenzene	(Reserved)	29[b,e]	95943
1,2,4-trichlorobenzene	(Reserved)	940[b,f]	120821
Toluene	17,500[a]	200,000[b,f]	108883
2,4-dinitrotoluene	330[a]	91[b,e]	121142
Phenols and Cresols:			
Phenol	10,200[a]	2,560[b]	108952
2-chlorophenol	4,380[a]	400[b,f]	95578
3-methyl-4-chlorophenol	30[a]	(Reserved)	59507
2,4-dichlorophenol	2,020[a]	365[b]	120832
2,4,5-trichlorophenol	100[a]	63[b]	95954
2,4,6-trichlorophenol	(Reserved)	65[b,e]	88062
Dinitrophenols	(Reserved)	140,000[b,e]	25550587
Nitrophenols	230[a]	150[b]	.....

POLLUTANT	CRITERIA (ug/l) Acute	Chronic	CAS No.*
2-methyl-4,6-dinitrophenol	(Reserved)	765[b,f]	534521
2,4-dinitrophenol	(Reserved)	14,000[b,f]	51285
2,4-dimethylphenol	2,120[a]	2,300[b,f]	105679
Phthalate Esters:			
Phthalate esters	940[a]	3.0[b]	.....
Butylbenzyl phthalate	(Reserved)	5,200[b,f]	85687
Di-N-butyl phthalate	(Reserved)	12,000[b,f]	84742
Diethyl phthalate	(Reserved)	120,000[b,f]	84662
Di-2-ethylhexyl phthalate	2,000[a]	59.2[b,e]	117817
Dimethyl phthalate	(Reserved)	29,000,000[b,e]	131113
Polycyclic Aromatic Hydrocarbons (PAHs):			
Acenaphthene	1,700[a]	520[b]	83329
Anthracene	(Reserved)	110,000[b,f]	120127
Benzo(a)anthracene	(Reserved)	0.49[b,e]	56553
Benzo(a)pyrene	(Reserved)	0.49[b,e]	50328
Benzo(b)fluoranthene	(Reserved)	0.49[b,e]	205992
Benzo(k)fluoranthene	(Reserved)	0.49[b,e]	207089
Chrysene	(Reserved)	0.49[b,e]	218019
Dibenzo(a,h)anthracene	(Reserved)	0.49[b,e]	53703
Fluoranthene	3,980[a]	370[b,f]	206440
Fluorene	(Reserved)	14,000[b,f]	86737
Ideno(1,2,3-cd)pyrene	(Reserved)	0.49[b,e]	193395
Naphthalene	2,300[a]	620[b]	91203
2-chloronaphthalene	1,600[a]	4,300[b,f]	91587
Phenanthrene	30[a]	6.3[b]	85018
Pyrene	(Reserved)	11,000[b,f]	129000
Nitrosamines and other Nitrogen-containing Compounds:			
Nitrosamines	5,850[a]	12.4[b,e]	35576911
Benzidine	2,500[a]	0.00535[b,e]	92875
3,3-dichlorobenzidine	(Reserved)	0.77[b,e]	91941
1,2-diphenylhydrazine	270[a]	5.4[b,e]	122667

POLLUTANT	CRITERIA (ug/l) Acute	Chronic	CAS No.*
Acrylonitrile	7,550[a]	6.65[b,e]	107131
N-nitrosodibutylamine	(Reserved)	5.87[b,e]	924163
N-nitrosodiethylamine	(Reserved)	12.4[b,e]	55185
N-nitrosodimethylamine	(Reserved)	81[b,e]	62759
N-nitrosodiphenylamine	(Reserved)	160[b,e]	86306
N-nitrosodi-N-propylamine	(Reserved)	14.0[b,e]	621647
N-nitrosopyrrolidine	(Reserved)	919[b,e]	930552

[a] Concentration not to be exceeded at any time
[b] Twenty-four hour average concentration
[c] One-hour average concentration
[d] Four-day average concentration
[e] Human health criteria at the 10^{-5} risk level for carcinogens based on the consumption of fish and other aquatic organisms
[f] Human health criteria based on the consumption of fish and other aquatic organisms

[1] Benzene hexachloride or hexachlorocyclohexane
[2] Gamma-BHC
[3] Dimethyl tetrachloroterephthalate
[4] Dichlorodiphenyltrichloroethane
[5] 2,3,7,8-tetrachloro-dibenzo-p-dioxin or 2,3,7,8-TCDD
[6] Criteria for metals and inorganics apply to dissolved concentrations
[7] The conversion factors for cadmium are hardness dependent and defined by:
ACF = 1.136672-[ln *hardness* (0.041838)]
CCF = 1.101672-[ln *hardness* (0.041838)]
[8] The conversion factor for lead (acute and chronic) is hardness dependent and defined by:
CF = 1.46203 - [(ln *hardness*)(0.145712)]
[9] Chronic criterion for mercury applies to total recoverable concentrations
[10] Criteria for selenium apply to total recoverable concentrations

004.01D Petroleum Oil.

Not to exceed 10 mg/l.

004.01E Residual Chlorine

004.01E1 One-hour average concentration not to exceed 19 ug/l.

004.01E2 Four-day average concentration not to exceed 11 ug/l.

004.02 Wildlife

Wetlands assigned this beneficial use provide, or could provide, habitat capable of supporting wildlife on a regular or periodic basis. Wildlife are undomesticated terrestrial or avian life forms which may utilize wetlands to support life functions such as watering, feeding, loafing, predator protection, and nesting. Examples of wildlife include, but are not limited to, furbearers, waterfowl, shorebirds, migratory birds, and reptiles.

004.02A General Criteria

Because wildlife utilizing wetlands rely on aquatic biota in many cases for food and habitat, general criteria and toxic criteria listed for the protection of aquatic life (paragraphs 004.01A and 004.01C) shall also apply for the protection of wildlife.

004.02B Biological Criteria

Any human activity causing water pollution which would cause a significant adverse impact to an identified “key species” is a violation of these Standards.

004.02B1 Key Species

Key wildlife species are identified endangered or threatened species. The following list defines the wildlife species considered by the Department to be key species.

COMMON NAME	SCIENTIFIC NAME
Endangered Species:	
Eskimo Curlew	*Numenius borealis*
Whooping Crane	*Grus americana*
Interior Least Tern	*Sterna antillarum athalassos*
River Otter	*Lutra canadensis*
American Burying Beetle	*Nicrophorus americanus*
Salt Creek Tiger Beetle	*Cincindela nevadica lincolniana*
Threatened Species:	
Bald Eagle	*Haliaeetus leucocephalus*
Piping Plover	*Charadrius melodus*

004.03 Agricultural Water Supply

Wetlands assigned this beneficial use are used or have the potential to be used for general agricultural purposes (e.g., irrigation and livestock watering) without treatment. In some cases, however, natural background water quality may limit their use for agricultural purposes.

004.03A General Criteria

Wastes or toxic substances introduced directly or indirectly by human activity in concentrations that would degrade the use (i.e., would produce undesirable physiological effects in crops or livestock) shall not be allowed. Where natural background water quality limits the use of a wetland for agricultural purposes, water quality criteria for conductivity and selenium shall be based on the natural background condition.

004.03B Conductivity.

Not to exceed 2,000 umhos/cm between April 1 and September 30.

004.03C Nitrate and Nitrite as Nitrogen.

Not to exceed 100 mg/l.

004.03D Selenium.

Not to exceed 0.02mg/l.

004.04 Aesthetics.

This use applies to all wetlands of the state. To be aesthetically acceptable, wetlands shall be free from human-induced pollution which causes: 1) noxious odors; 2) floating, suspended, colloidal, or settleable materials that produce objectionable films, colors, turbidity, or deposits; and 3) the occurrence of undesirable or nuisance aquatic life (e.g., algal blooms). Wetlands shall also be free of junk, refuse, and discarded dead animals.

Enabling Legislation: Neb. Rev. Stat. §§ 81-1501(1) and 81-1505(1)(2)

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